

on these hybrids and KÖHLREUTER and GÄRTNER succeeded in getting hybrids experimentally. It is claimed that at the present time over 100 hybrids have been observed in this genus. BLOMQUIST³⁰ has made observations on *Verbascum* hybrids growing in the Swedish Royal Botanical Garden at Bergielund. Among the various species growing there, he discovered in 1908 eight individuals which he claims were hybrids in the following combinations: *V. nigrum* × *thapsus* (4), *V. nigrum* × *phlomoides* (1), *V. nigrum* × *lychnitis* (1), and *V. longifolium* × *speciosum* (2). His marks of identification were the sterile conditions and the intermediate forms of characters between two species. He made a special study of the two individuals which he calls *V. longifolium* × *speciosum*, since such a hybrid had not previously been discussed in botanical literature. These two examples show, in general, intermediate forms in the specific characters of the parents, except in the size of the flowers, which are markedly larger in the hybrids than in either of the parents. From his observations BLOMQUIST comes to a partial agreement with SCHIFFNER in that hybrids are intermediate in form between the parents; but he finds, as did DEVRIES, that while hybrids as a rule show such forms they may take on an exact resemblance to either parent or any transition form between.

The reviewer is of the opinion that, in the study of hybrids, simple observation does not suffice, since methods used in identification cannot give assurance of what hybrid is dealt with, and that such work should be checked up by experimentation.—HUGO L. BLOMQUIST.

Edible and poisonous mushrooms.—A generation ago Illinois took a very advanced position in the study of its fungous flora, and the late Professor BURRILL and his students have ranked among the foremost students of economic mycology in the country. The present publication,³¹ paralleling what has been done in other states, is the first of its kind referring to an important, neglected, and much misunderstood branch of the same general subject, the fungi of Illinois which may be used as food or which should be known because of the danger which attends eating them. Structure, life history, and ecological relations are given ample consideration for an understanding of the fleshy fungi in more than their perfunctory recognition as fit or unfit for human food, and chapters are devoted to their cultivation, food value, or poisonous properties, and to the ways in which edible species may be prepared for the table.

The most practically useful part of the treatise, which should lead to the avoidance of accidents due to ignorance, and the utilization of large quantities of excellent food which now goes to waste, will be found in the clean cut keys and well written descriptions by which the several kinds may be known, and

³⁰ BLOMQUIST S. G., *Verbascum*-Hybrider särskildt *V. longifolium* × *speciosum*. Acta Horti Bergiani 5:1-10. figs. 6. 1909.

³¹ MCDUGALL, WALTER B., Some edible and poisonous mushrooms. Bull. Ill. State Lab. Nat. Hist. 11:413-555. pls. 85-143. fig. 1. 1917.

in the large series of unusually good and well reproduced photographic illustrations by which the descriptions are reinforced. Although only a small fraction of the fleshy fungi of Illinois are included, the more important are considered, and the bulletin accounts for 61 edible and 9 inedible species.—W. TRELEASE.

Effect of copper sulphate.—JUNGELSON³² has examined the effect that sterilization of seeds with copper sulphate solutions may have upon the plants developing from them. He used *Zea Mays* and soaked the seeds in 1 or 2 per cent copper sulphate 1–24 hours. Both intact and more or less mutilated seeds were used to give different degrees of contact between the salt and parts of the embryo. The treatment weakened germination, modified the chlorophyll of the young plant, and delayed vegetative development and flowering. It caused the formation of several types of ears and grains not found in the checks. These effects increased with the concentration of the solution, the duration of treatment, and the degree of excoriation of the seed. The treatment with copper gave no precise change in the plant, but rather a tendency to great variation in one or several of many directions. This tendency to vary was transmitted to the second generation. JUNGELSON believes that the degeneration of some excellent strains of cereals may have been due to excessive use of copper sulphate or other fungicides applied to seeds. He sees in this also the possibility of the origin of certain monsters that breed true.—WM. CROCKER.

Herbarium Amboinense.—A monument to American botanical activity in the Malay region is MERRILL'S "Interpretation of Rumphius's Herbarium Amboinense,"³³ dedicated to the memory of CHARLES BUDD ROBINSON, JR., who lost his life in Amboina in 1913 while prosecuting studies toward its publication. RUMPHIUS, whose voluminous publication appeared about the middle of the eighteenth century, 50 years after his death, seems to have dealt primarily with the queer and the useful plants, and to have understood these and their relationships rather as the natives did than along the lines of modern taxonomy. Without its illustrations his herbarium would have passed into the category of efforts scarcely capable of correlation with subsequent work; with these, it has and will continue to hold a prominent place among publications on the Malay flora. The present "Interpretation" gives it a standing that should be lasting, provided care in the field, adequate linguistic preparation, scrupulous fidelity in weighing evidence, and an adherence to international rules of nomenclature can insure such a result for the work of one who today stands foremost in his knowledge of the Malay flora.—W. TRELEASE.

³² JUNGELSON, A., Sur des epis anormaux de maïs obtenus a la suite du traitement cuivrique de la semence. Rev. Gen. Bot. 29:244–248, 259–285. 1917.

³³ MERRILL, E. D., An interpretation of RUMPHIUS'S Herbarium Amboinense. pp. 595. Publ. no. 9. Depart. Agric. and Natural Resources, Bureau of Science. Manila: Bureau of Printing. 1917.